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85,585 and 73,418 parous women (Nurses' Health Study I & II; Mean age=50)

- Longer duration of lactation reduced risk of Type-2 diabetes
- Each additional year decreased risk by 15%
  - Independent of BMI, diet, exercise or smoking

Stuebe et al. 2005, JAMA, 294, 2601-2610

3

- Exclusive breastfeeding associated with greatest reduction in diabetes risk
- Longer duration per pregnancy resulted in greater benefit

Stuebe et al. 2005, JAMA, 294, 2601-2610

4

1,260 Chinese women with history of gestational diabetes

**Higher lactation intensity and longer duration lowered risk of postpartum diabetes and prediabetes**

Shen et al. 2019, Diabetes Metab Res Rev, e3115, doi: 10.1002/dmrr.3115

5

**Lifetime Protection For Mothers**

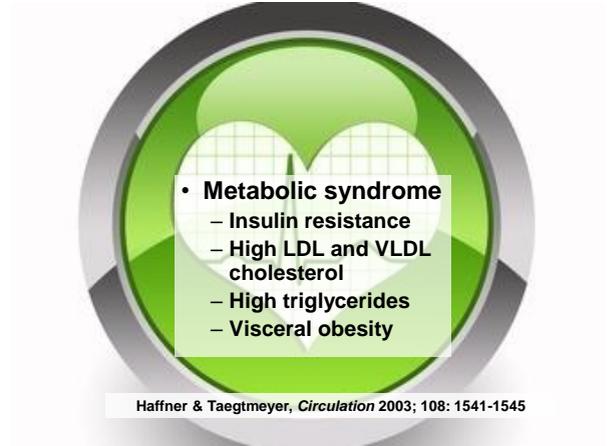
139,681 postmenopausal women (Mean age=63)

Schwartz et al. 2009, Obstet Gyn, 113, 974-982

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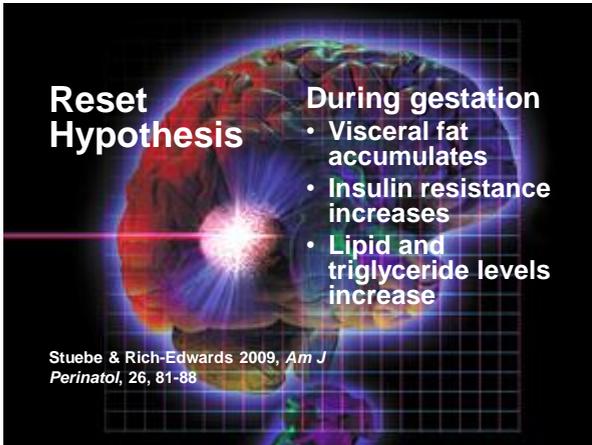


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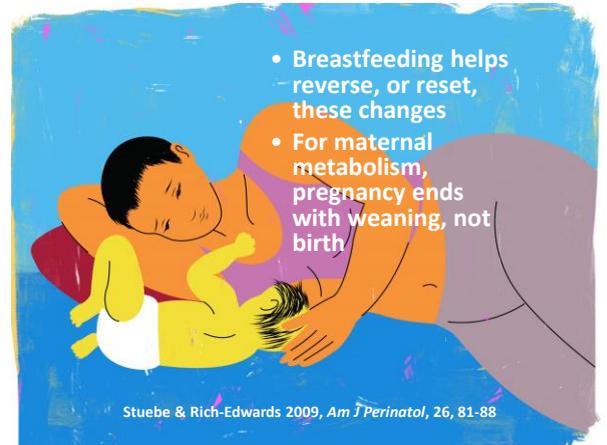
Haffner & Taegtmeier, *Circulation* 2003; 108: 1541-1545

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Stuebe & Rich-Edwards 2009, *Am J Perinatol*, 26, 81-88

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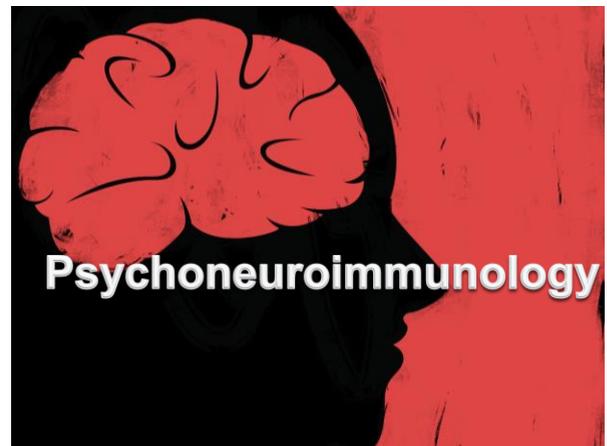


Stuebe & Rich-Edwards 2009, *Am J Perinatol*, 26, 81-88

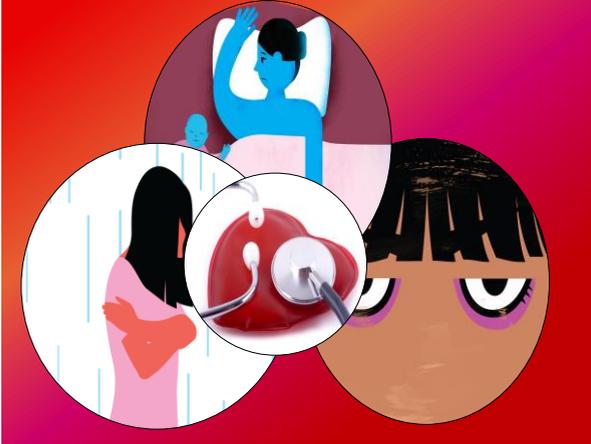
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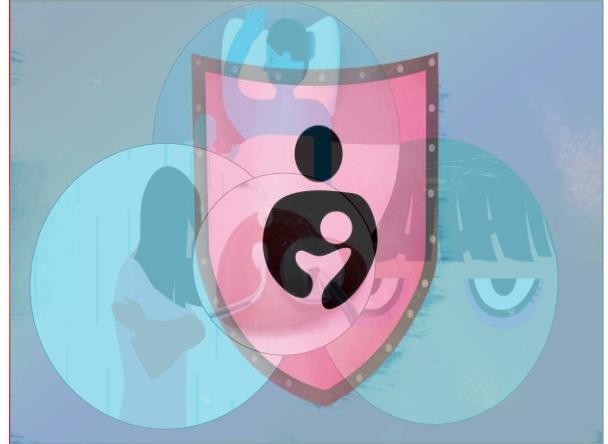
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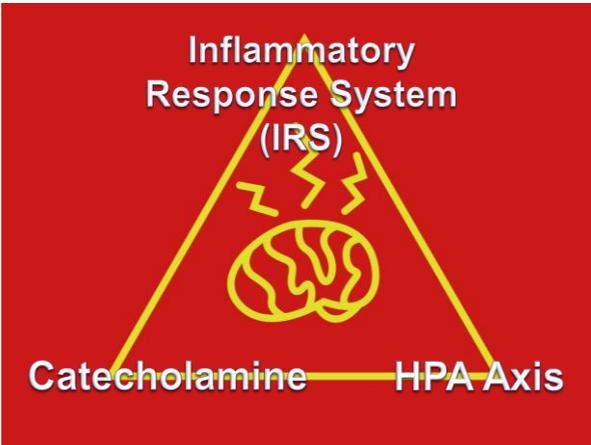
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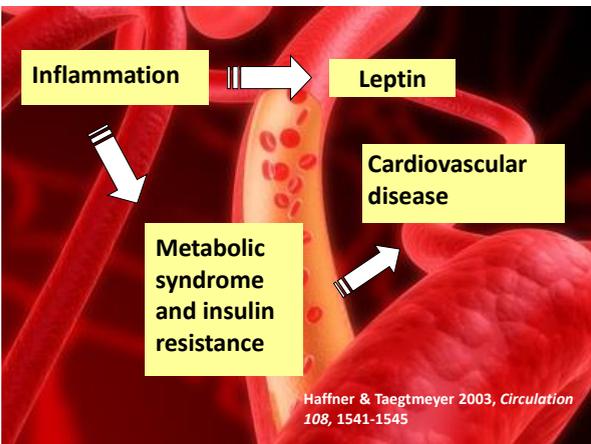
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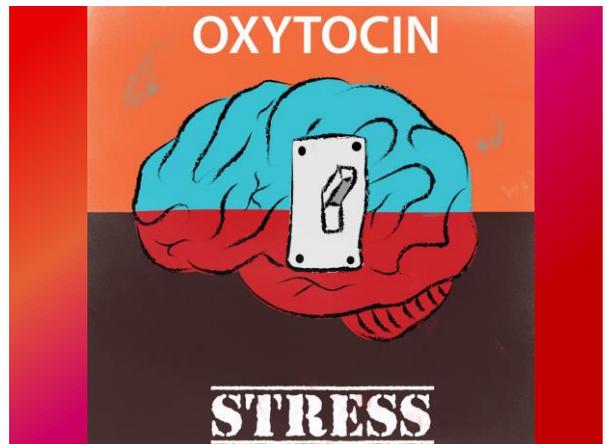
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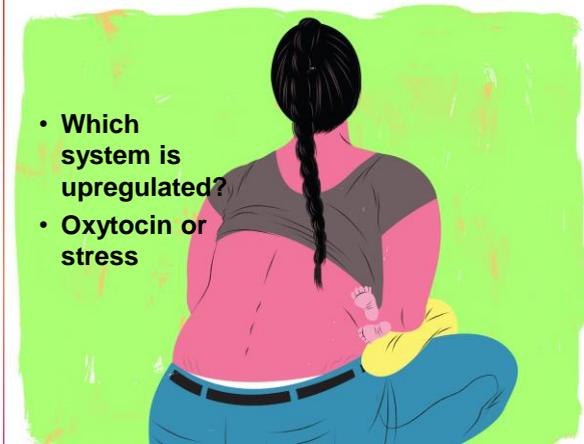
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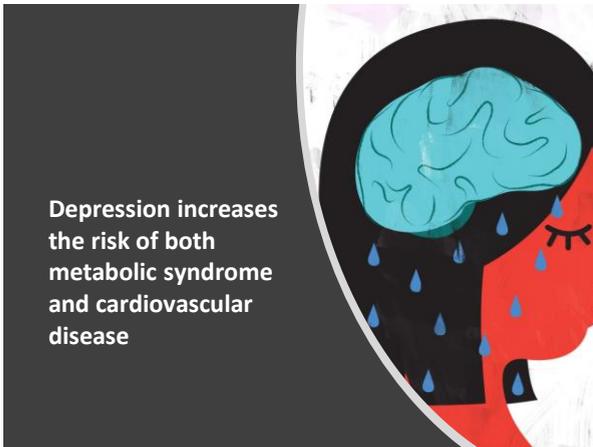
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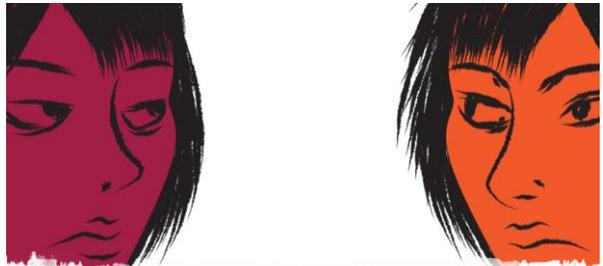
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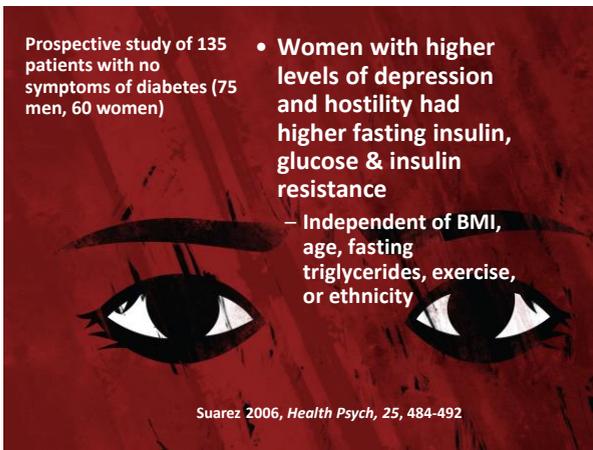
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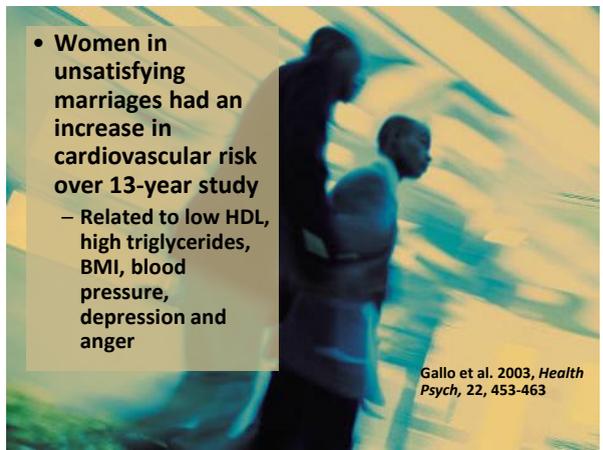
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The neuroscience of social rejection

25



Jenson-Campbell & MacDonald, 2011 *Social pain* (p. 3-8). Amer Psychological Assn

26



We physically experience threats to our relationships as threats to our survival

27



Social rejection in childhood can sensitize people for the rest of their lives

Eisenberger, 2011 *Social pain* (53-78); Panksepp, 2011 *Social pain* (11-51), Amer Psycholog Assn.

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The Impact of Discrimination

29



296 African Americans

Discrimination associated with elevated C-reactive protein levels

Lewis et al. 2010, *Brain Behav Immun*, 24(3), 438-443

30

**Experienced discrimination**

- You are treated with less courtesy than other people
- You are treated with less respect than other people
- You receive poorer service than other people at restaurants and stores
- People act as if they think you are not smart

Lewis et al. 2010, *Brain Behav Immun*, 24(3), 438-443

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**The Role of Sleep**

32

**Sleep disorders increase inflammation markers (CRP, IL-6 & TNF- $\alpha$ )**

Suarez & Goforth. 2010 In *Psychoneuroimmunology of Chronic Disease*: American Psychological Association

33

**Even short periods of sleep deprivation can elevate cortisol and glucose levels, and increase insulin resistance**

McEwen 2003, *Biological Psychiatry*, 54, 200-207

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187 adults

**Whites**

16 min to sleep

6.8% SWS

**Blacks**

25 min to sleep

3.6% SWS

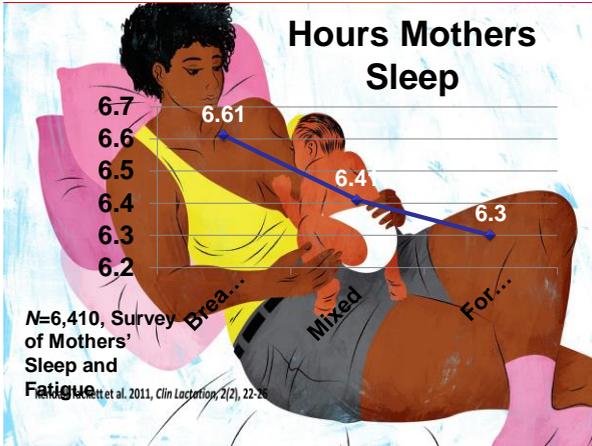
**Sleep Time**

Mezick et al. 2008, *Psychosom Med*, 70, 410-416

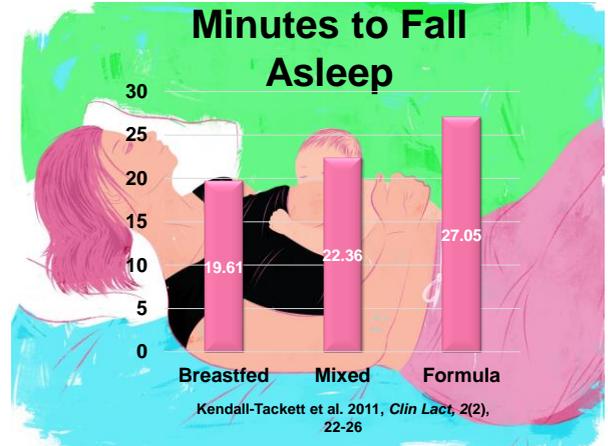
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**Mother-infant sleep**

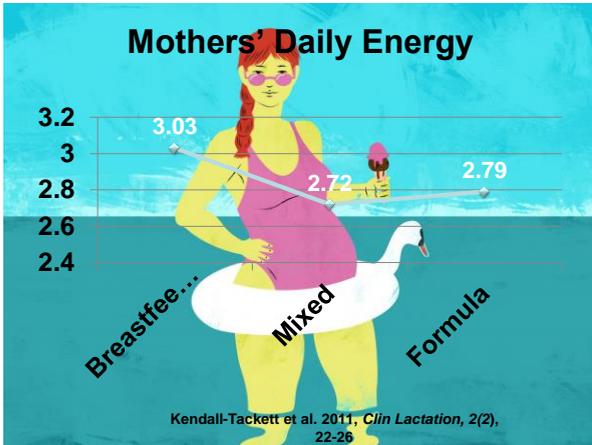
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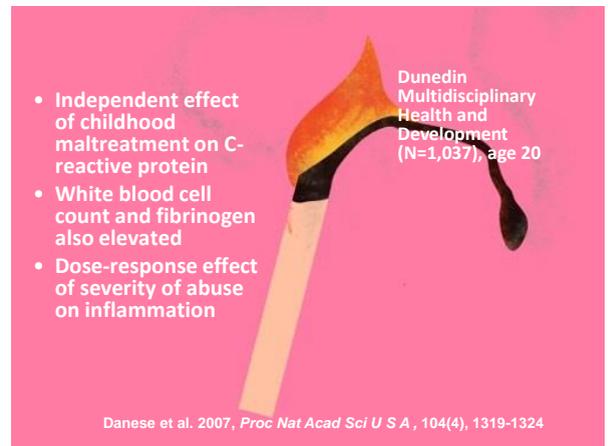
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Dunedin Multidisciplinary Health and Development (N=1,037), age 32

At 32 years, those who experienced adverse childhood experiences (low SES, maltreatment or social isolation) had higher rates of:

- Major depression
- Systemic inflammation
- > 3 metabolic risk markers

Danese et al. 2009, *Arch Ped Adolesc Med*, 163, 1135-1143

43

• **Cumulative childhood adversity is modestly related to adult cardiometabolic disease**

Review of Odds Ratio studies (29 studies, N=247,393) and Hazard Ratio studies (9 studies, N=179,612)

Jakubowski et al. 2018, *Health Psych*, 37(8), 701-715

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**Why does breastfeeding help?**

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**OXYTOCIN**

**STRESS**

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**Mothers' Depression**

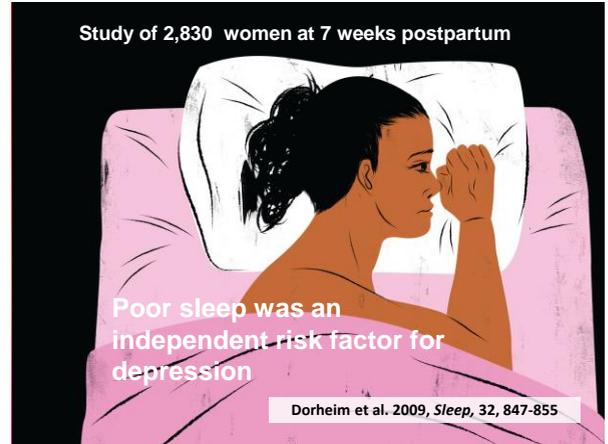
Feeding Method	Mothers' Depression Level
Breastfeeding	~0.8
Mixed	~1.0
Formula	~1.2

Kendall-Tackett et al. 2011, *Clin Lactation*, 2(2), 22-26

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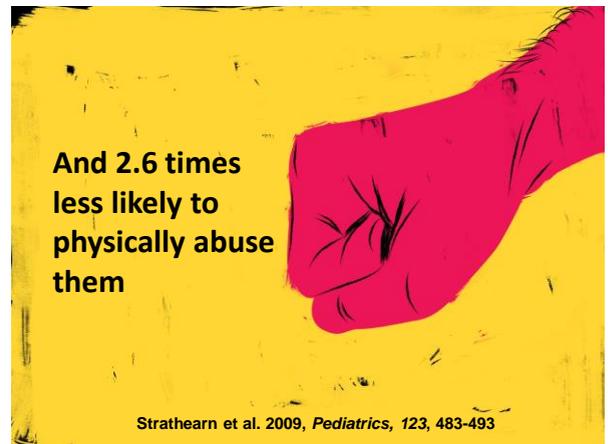
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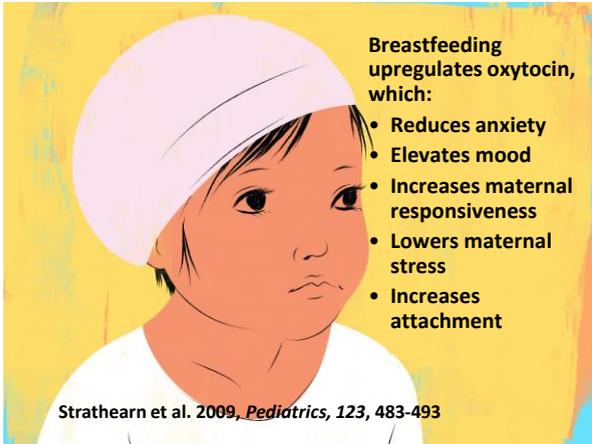
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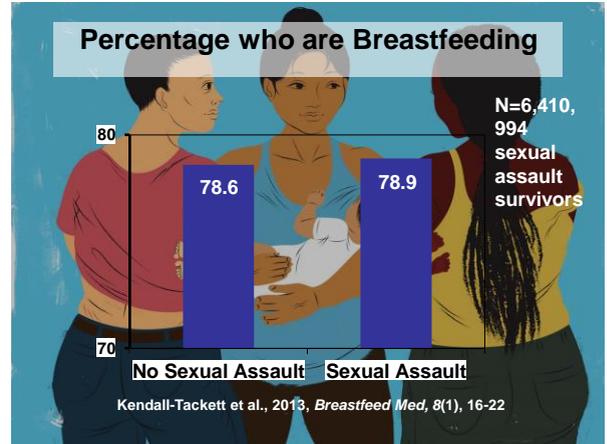
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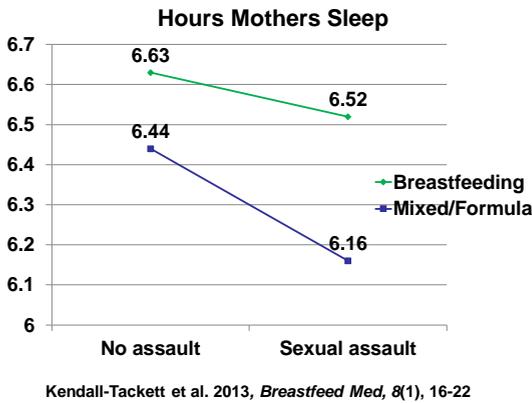
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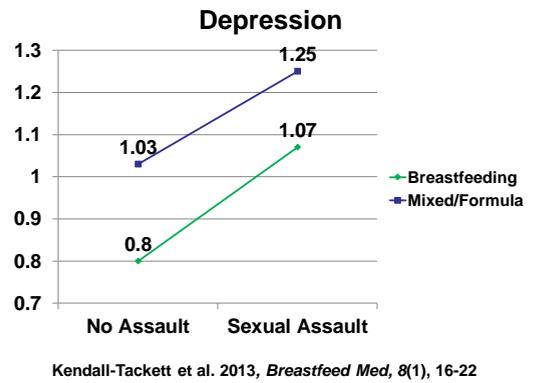
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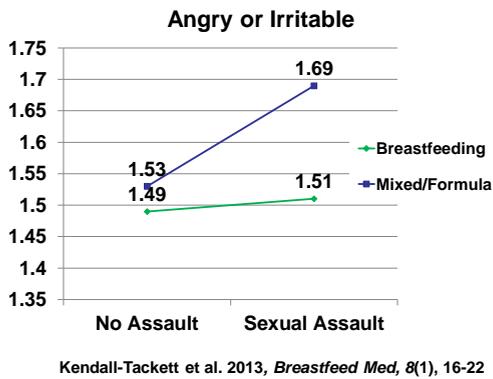
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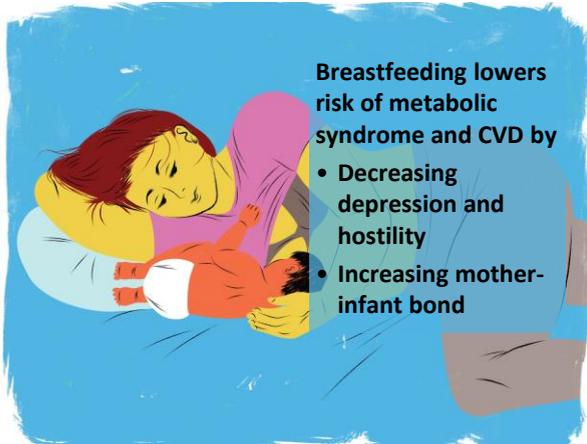
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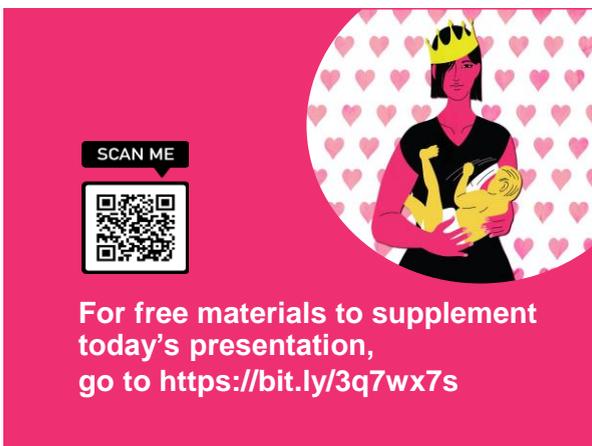
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